

Time for an International Commitment to End Use of HEU for Mo-99

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Outline

- ⌘ A Nonproliferation Perspective

- ⌘ HEU-based medical isotopes: Phasing Out?

- ⌘ Positive Developments & Challenges

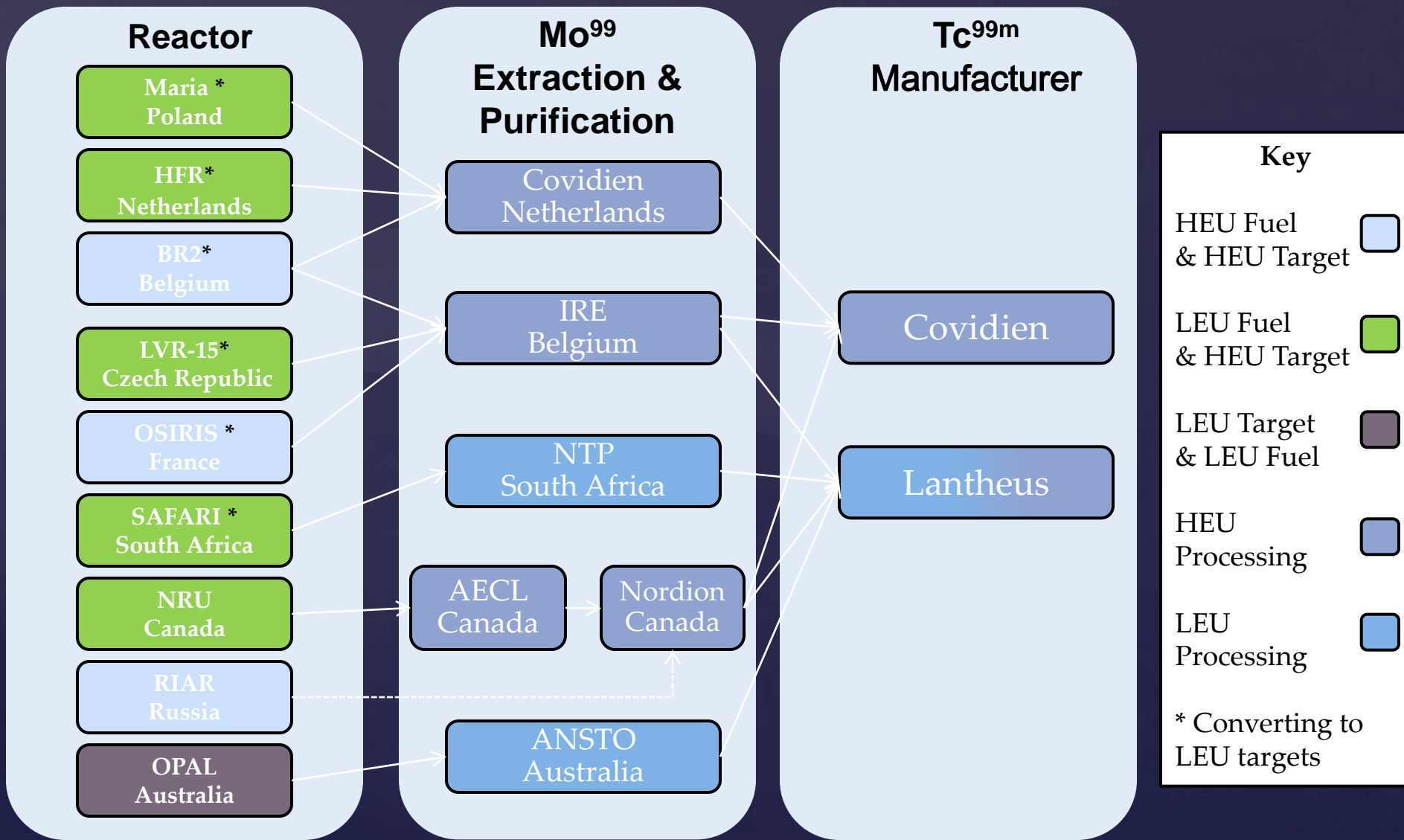
- ⌘ What's Needed?

 - ⌘ 2014 NSS Commitments

HEU-based Medical Isotopes: Phasing Out?

- ⌘ Current Major Mo-99 production reactors and processors in Europe, Australia, South Africa, Canada, Russia
- ⌘ All have said shifting from HEU at some point in next few years
 - ⌘ South Africa/Australia have shifted already
 - ⌘ European producers by 2015
 - ⌘ Canada shutting NRU by 2016; switching to non-LEU
 - ⌘ Russia's RIAR to use own HEU-based targets and HEU-fueled reactor for supply to MDS Nordion in near future; but Russians have pledged to convert

Medical Isotopes: Current U.S. Mo⁹⁹ / Tc^{99m} Supply Matrix



Policy Successes

- ∅ March 2012 Nuclear Security Summit
- ∅ June 2012 White House Policy
- ∅ Summer-Fall 2012: New Russian Commitments (?)
- ∅ Jan 2013– New U.S. law

2012 Nuclear Security Summit

& Important steps toward eliminating HEU in Mo 99 production

& Communique:

⌘ (1) “We encourage States to take measures to minimize the use of HEU taking into account the need for assured supplies of medical isotopes, and encourage States in a position to do so, by the end of 2013, to announce voluntary specific actions intended to minimize the use of HEU.

⌘ We also encourage States to promote the use of LEU fuels and targets in commercial applications such as isotope production, and in this regard, welcome relevant international cooperation on high-density LEU fuel to support the conversion of research and test reactors.”

2012 Nuclear Security Summit (2)

Joint Statements (“Gift Baskets”)

- ⌘ Belgium, France, and the Netherlands pledged to eliminate HEU use in medical isotope production by 2015
- ⌘ Belgium, France, ROK, and U.S. promised to cooperate in development and testing of new high-density LEU fuel

June 2012 White House Commitments

- ⌘ Obama administration announced steps to encourage purchases of LEU-based Mo-99:
 - ⌘ “Calling upon the Mo-99 industry to voluntarily establish a unique product code or similar identifying markers for Mo-99-based radiopharmaceutical products that are produced without the use of HEU;” (In Progress)
 - ⌘ “Preferentially procuring, through certain U.S. government entities, Mo-99-based products produced without the use of HEU, whenever they are available, and in a manner consistent with U.S. obligations under international trade agreements;” (Underway with VA soon)
 - ⌘ “Examining potential health-insurance payment options that might promote a sustainable non-HEU supply of Mo-99;” (\$10 differential for medicare/medicaid) –LIMITED EFFECT AND CHALLENGES
 - ⌘ “Taking steps to further reduce exports of HEU that will be used for medical isotope production when sufficient supplies of non-HEU-produced Mo-99 are available to the global marketplace;” (one last shipment?)
 - ⌘ Continued on next page.

June 2012 Commitments (2)

- ⌘ “Continuing to encourage domestic commercial entities in their efforts to produce Mo-99 without HEU during the transition of the Mo-99 industry to full-cost-recovery, and directing those resources to the projects with the greatest demonstrated progress;” (Yes)
- ⌘ “Continuing to provide support to international producers to assist in the conversion of Mo-99 production facilities from HEU to LEU.” (Yes)
 - ⌘ The White House, *Fact Sheet: Encouraging Reliable Supplies of Molybdenum-99 Produced without Highly Enriched Uranium*, June 7, 2012, <http://www.whitehouse.gov/>

American Medical Isotope Production Act

- ⌘ Signed into law by President Obama January 2, 2013
- ⌘ Incentivizes U.S. medical isotope production using LEU
 - ⌘ Bans U.S. exports of HEU for targets, fuel to WEU and Canada over a 7-13 year period. Goal is phase out by 2020.
 - ⌘ Authorizes cost-sharing arrangements to generate domestic isotope production
 - ⌘ *But emphasis on non-reactor technologies? Does this make sense?*
 - ⌘ Establishes U.S. government responsibility for waste disposition

Russian Commitments

- ⌘ Nicholas Archangelsky from Rosatom made speech at October RERTR conference in Poland
 - ⌘ Said Rosatom Chief Kiriienko had launched program to consider converting
 - ⌘ all civil Russian HEU reactors to LEU and
 - ⌘ Mo-99 target conversion to LEU
- ⌘ Short term– projects that don't require new fuel types
 - ⌘ Includes ARGUS reactor for MO-99 production
 - ⌘ Feasibility study on converting Obninsk-NIFKHI—uses same fuel assemblies as WWR-K in Kazakhstan-used for domestic Mo-99 production
- ⌘ Medium term-
 - ⌘ Obninsk conversion
 - ⌘ Conversion from HEU targets in RIAR
- ⌘ Long term- development of certain HD fuels—needed for RIAR reactors
- ⌘ Rhetoric is good, but lack specifics
- ⌘ Apparently having technical problems with product

Policy Challenges

- ⌘ Need for Russian implementation of commitments
- ⌘ Need for other countries to match U.S. policy changes
- ⌘ Need for licensing non-HEU Tech-99, Mo-99 especially in Europe
- ⌘ Implementation of full cost recovery
 - ⌘ needed for new producers to come online & new processors
 - ⌘ not primarily an HEU conversion issue but will affect public acceptance
 - ⌘ Leave debate to others on how to handle this transition

What's needed?

- ⌘ International: Commitment by leaders at the 2014 NSS
- ⌘ Suggested Communique Language
 - ⌘ Commitment to end the use of HEU in Mo-99 production
 - ⌘ Ideally by December 31, 2016 but Russians may balk
 - ⌘ Pledge to engage in full cost recovery as defined by NEA
 - ⌘ Support for Providing Developing Ctys with Technology for indigenous production and supply of Mo-99

What's needed? (2)

Potential “Gift Basket” from Key NEA Members— US, EU, Japan, South Korea, and Australia

- ⌘ Pledge to adhere to December 31, 2016 deadline for ending HEU-based production if not included in communique with a fallback if NEA says insufficient global non-HEU production capacity is available.
- ⌘ Pledge to ban the use of HEU-based Mo-99 by December 31, 2016, assuming the NEA certifies that a sufficient supply of LEU-based Mo-99 exists at that time.
- ⌘ Commitment to enact policies to expedite medical licensing, engage in preferential procurement, and provide sufficient reimbursement for non-HEU based Mo-99 by the end of 2014.
- ⌘ Seek to expand the pledges regarding HD targets and qualification
- ⌘ Pledge to make significant contribution to efforts to help developing ctys develop domestically oriented mo-99 programs.

What's needed? (3)

- ⌘ U.S. : On Right Track but tweaks needed
- ⌘ Congress needs to Ban the Use of non-HEU based Mo-99 by December 31, 2016 w/ fallback if insufficient supplies available.
- ⌘ Congress should hold hearings on issue to discuss this and implementation of American Medical Isotopes Act and Medicare Rule. Consider if any other tweaks needed for transition.